IPC J-STD-006B with Amendments 1 & 2

Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications

Developed by the Solder Alloy Task Group (5-24c) of the Assembly and Joining Processes Committee (5-20) of IPC

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Users of this standard are encouraged to participate in the development of future revisions.

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Table of Contents

1 SCOPE AND CLASSIFICATION 1
1.1 Scope 1
1.2 Classification 1
1.2.1 Alloy Composition 1
1.2.2 Alloy Impurity Level 1
1.2.3 Solder Form 1
1.2.4 Dimensional Characteristics 1
1.2.5 Flux Percentage and Metal Content 1
1.2.6 Flux Classification 1

2 APPLICABLE DOCUMENTS 1
2.1 Joint Industry Standards 1
2.2 International Standards Organization (ISO) 2
2.3 IPC 2
2.4 American Society for Testing and Materials (ASTM) 2
2.5 Order of Precedence 2
2.6 Terms and Definitions 2
2.6.1* Acceptance Tests 2
2.6.2 Base Metal 2
2.6.3 Corrosion 2
2.6.4 Density 2
2.6.5* Dewetting 2
2.6.6 Eutectic 2
2.6.7* Flux 2
2.6.8 Flux Characterization 2
2.6.9 Flux Residue 2
2.6.10 Liquidus 2
2.6.11 Nonwetting 2
2.6.12 Solder 3
2.6.13 Solidus 3
2.6.14* Wetting, Solder

3 REQUIREMENTS 3
3.1 Materials 3
3.2 Alloy Composition 3
3.3 Alloy Impurities 3
3.3.1 Variation D Alloys 3
3.4 Solder Forms and Dimensional Characteristics 4
3.4.1 Bar Solder 4
3.4.2 Wire Solder 4
3.4.3 Ribbon Solder 4
3.4.4 Solder Powder 4
3.4.5 Spheres 4
3.4.6 Special Form Solder 4
3.5 Fluxed Solder Characteristics 4
3.5.1 Flux Cored Solder 4
3.5.1.1 Spitting 4
3.5.2 Flux Coated Solder 4
3.6 Flux Characteristics 4
3.6.1 Flux Percentage 4
3.6.2 Flux Classification 4
3.6.3 Solder Pool 4
3.6.4 Flux Residue Dryness 5
3.7 Labeling for Product Identification 5
3.8 Workmanship 5

4 QUALITY ASSURANCE PROVISIONS 5
4.1 Responsibility for Inspection 5
4.2 Responsibility for Compliance 5
4.3 Quality Assurance Program 5
4.4 Categories of Inspections 5
4.4.1 Materials Inspection 5
4.4.2 Qualification Inspections 5
4.4.3 Quality Conformance Inspections 5
4.5 Test Equipment and Inspection Facilities 6
4.6 Inspection Conditions 6
4.7 Inspection Routine 6
4.8 Inspection Sampling 6
4.9 Preparation of Solder Alloy for Test 6
4.9.1 Flux Cored Solder 6
4.9.2 Wire Solder Up to Approximately 6 mm Diameter 6
4.9.3 Ribbon Solder and Other Wire Solder 6
4.10 Failure 7
4.11 Inspection Reporting 7

5 PREPARATION FOR DELIVERY 7
5.1 Preservation, Packing, and Packaging 7

6 NOTES 7
6.1 Selection 7
6.1.1 Alloys 7
6.1.1.1 Antimony-Containing Alloys 7
6.1.1.2 Bismuth-Containing and Bismuth-Based Alloys 7
6.1.1.3 Cadmium-Containing Alloys 7
6.1.1.4 Copper-Containing Alloys 7
6.1.1.5 Gold Alloys 7

6.1.1.6 Indium-Containing and Indium-Based Alloys 7
6.1.1.7 Lead-Free Alloys 7
6.1.1.8 Silver-Containing Alloys 8
6.1.1.9 Tin-Silver-Copper Alloys with or without Antimony 8
6.2 Standard Solder Product Packages 8
6.2.1 Wire and Ribbon Solders 8
6.2.2 Bar Solders 8
6.2.3 Solder Powder 8
6.2.4 Solder Spheres 8
6.3 Standard Description of Solid Solder Products 8
6.4 Qualitative Test for the Presence of Lead 8
6.5 Labeling for Lead-Free and Leaded Marking, Symbols and Labels 8

Appendix A Solder Alloys 10

Appendix B Examples of Inspection Report Format 18

Appendix B-1 Test Report for Solder Alloy Composition and Impurity Level 18

Appendix B-2 Inspection Report for Fluxed Wire/Ribbon Solder 19

Appendix B-3 Inspection Report for Non-Fluxed Solder 20

Appendix B-4 Inspection Report for Solder Powder 21

Figures

Figure 6-1 Recommended Lead Free Marking Symbol 8

Tables

Table 4-1 Requirements and Inspection Routine 6
Table A-1 Composition, and Temperature Characteristics of Lead-free Solder Alloys 10
Table A-2 Composition and Temperature Characteristics of Common Tin-Lead Alloys 12
Table A-3 Composition and Temperature Characteristics for Specialty (non-Tin/Lead) Alloys 14
Table A-4 Cross-Reference from Solidus and Liquidus Temperatures to Alloy Names by Temperature 15
Table A-5 Cross-Reference from ISO 9453 Alloy Numbers and Designations to J-STD-006 Alloy Names 17

Requirements for Electronic Grade Solder Alloys and Fluxed and Non-Fluxed Solid Solders for Electronic Soldering Applications

1 SCOPE AND CLASSIFICATION

1.1 Scope This standard prescribes the nomenclature, requirements and test methods for electronic grade solder alloys; for fluxed and non-fluxed bar, ribbon, and powder solders, for electronic soldering applications; and for ''special'' electronic grade solders. This is a quality control standard and is not intended to relate directly to the material's performance in the manufacturing process. Solders for applications other than electronics should be procured using ASTM B-32.

This standard is one of a set of three joint industry standards that prescribe the requirements and test methods for soldering materials for use in the electronics industry. The other two joint industry standards are:

IPC/EIA J-STD-004 Requirements for Soldering Fluxes

IPC/EIA J-STD-005 Requirements for Soldering Pastes

Additionally, marking requirements for lead-free materials and assemblies is addressed in this document by direct application of text from IPC/JEDEC J-STD-609, *Lead-Free and Leaded Marking, Symbols and Labels* (see 6.5).

1.2 Classification Soldering alloys covered by this standard **shall** be classified by alloy composition and impurity level, solder form and dimensional characteristics peculiar to the solder form, flux percentage and flux classification, if applicable. These classifications **shall** be used as part of the standard description of solder products (see 6.3).

1.2.1 Alloy Composition The solder alloys covered by this standard include, but are not limited to, the alloys listed in Appendix A, including pure tin and pure indium. Each alloy is identified by an alloy name, which is composed of a series of alphanumeric characters that identify the component elements in the alloy by chemical symbol and nominal percentage by mass.

1.2.2 Alloy Impurity Level The allowable impurity level of the solder alloys covered by this standard is identified in 3.3. See 3.3.1 for the description of Variation D alloys. The alloy variation letter D is added to the end of an alloy name and becomes part of the alloy's name.

1.2.3 Solder Form The forms of solder materials covered by this set of standards include paste (cream), bar, powder, ribbon, wire and special electronic grade solders which do not fully comply with the requirements of standard solder alloys and forms listed herein. Some examples of special form solders are anodes, ingots, preforms, bars with hook and eye ends, and multiple-alloy solder powders. A single-letter identifying symbol as defined below may be used.

P – Paste (Cream)
B – Bar
D – Powder
R – Ribbon W – Wire
S – Special
H – Sphere

1.2.4 Dimensional Characteristics Standard bar solders are further classified by unit mass. Wire solders are further classified by wire size (outside diameter) and unit mass. Ribbon solders are further classified by thickness, width and unit mass. Powder solders are further classified by powder particle size distribution and unit mass (see 3.4.1 to 3.4.5).

1.2.5 Flux Percentage and Metal Content The nominal percentage of flux by mass in solid-form solder products **shall** be specified. For solder paste products, metal content **shall** be specified instead. ''Metal content'' refers to the percentage of metal in solder paste by mass (see 3.4.1 to 3.4.5).

1.2.6 Flux Classification The material of composition, activity level and halide content of fluxes covered by this set of standards **shall** be specified according to IPC/EIA J-STD-004.

2 APPLICABLE DOCUMENTS

The following documents form a part of this standard to the extent specified herein. Unless a specific issue is cited herein or in the contract or purchase order, the issue in effect on the date of invitation for bids or request for proposal **shall** apply.

2.1 Joint Industry Standards[1]

IPC/EIA J-STD-004 Requirements for Soldering Fluxes

IPC/EIA J-STD-005 Requirements for Soldering Pastes

1. www.ipc.org